

Fir Engraver

Horizontal egg galleries

Name and Description—*Scolytus ventralis* LeConte [Coleoptera: Curculionidae: Scolytinae]

The fir engraver is an important bark beetle of true firs. In the central Rocky Mountains, this insect is most frequently observed in white fir, *Abies concolor*. Epidemics of fir engraver are observed most frequently in the Pacific Northwest and California and are often associated with periods of drought. The adults are 1/10-1/7 inch (2.5-3.8 mm) long (fig. 1). The larvae are small, white, legless grubs.



Figure 1. Fir engraver adult. Photo: Don Owen, California Department of Forestry and Fire Protection, Bugwood.org.

Egg galleries are transverse, often with a visible nuptial chamber at the center of the two arms of the gallery. The female deposits eggs in niches on both sides of the gallery. The larval galleries are longitudinal, and both the egg and larval galleries score the wood deeply (fig. 2). Pupation occurs in the inner bark at the end of the larval galleries.

Hosts—In the southern Rocky Mountains, this insect is most commonly found in white fir. Throughout the West, the fir engraver may be found in a variety of true fir species, including white fir, grand fir, and California red fir and may occasionally be found infesting other species, including Douglas-fir. The range of this bark beetle includes British Columbia south through the Pacific Northwest and Rocky Mountains into New Mexico and Arizona.

Life Cycle—The fir engraver has a 1-year life cycle except in cooler portions of its range where complete development takes 2 years. In Colorado, flight may occur any time from early spring until early fall. The fir engraver is monogamous, and females initiate attack on host trees. Apparently, this species does not utilize aggregating pheromones during its attack, and the dynamics of attack appear to be associated with primary host volatiles alone. The fir engraver transports a brown-staining fungus that is important for successful development of the brood larvae.

Damage—The fir engraver infests boles, large branches, slash, and windthrown trees larger than 4 inches (10 cm) in diameter. Trees infected with root disease or defoliated by Douglas-fir tussock moth or western spruce budworm are especially subject to attack. Trees may be killed outright (fig. 3) or attacked repeatedly for multiple years, leading to patches of dead bark. The beetles also may attack the tops of trees, causing top-kill.



Figure 2. Fir engraver egg and larval galleries. Photo: Intermountain Region, USDA Forest Service, Bugwood.org.

Management—Maintaining good tree vigor in ornamental settings is important for preventing losses to fir engraver. Also, care during construction and soil disturbing activities should be practiced to limit root and lower stem damage. Natural controls include predators and parasitoids.

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Direct control methods are considered impractical due to the tendency of beetles to be common in portions of living trees that are out of view from the ground. Insecticides labeled for bark beetles will provide protection from fir engraver attack.



Figure 3. White fir mortality caused by fir engraver on the Rio Grande National Forest.
Photo: William M. Ciesla, Forest Health Management International, Bugwood.org.

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1. Wood, S.L. 1982. The bark and ambrosia beetles of North and Central America (Coleoptera: Scolytidae), a taxonomic monograph. Great Basin Naturalist Memoir 6. 1359 p.